

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application PREIJERT, Stefan *et al.*
of:

Group Art Unit: 3617

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Examiner: STORMER, R.

For: HOLLOW CONSTRUCTION ELEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF STEFAN PREIJERT UNDER 37 C.F.R. § 1.132

I, Stefan Preijert, hereby declare as set forth below.

1. I am one of the inventors of the subject matter being claimed in the above-referenced patent application. I am familiar with the currently pending claims in the application.

2. I consider myself to have at least ordinary skill in the relevant art.

3. In that regard, I have an 80p degree in mechanical engineering from the Royal College of Technology (KTH). The coursework for that degree included material concentrating on production methods, including forging methods.

4. I also received my Master of Science degree in technical mechanics from Chalmers Technical University (CTH) in Gothenburg, Sweden, in 1994.

5. I have been employed at Volvo Trucks (Volvo Lastvagnar AB) since 1994. At Volvo, I have worked as an Analyst during my entire employment.

6. Among other things, I have been responsible for parabolic leaf spring design, involving calculations relating to the design for the proper kinematic leaf spring behavior and the introduction of changes in kinematic measurement methods as used by spring suppliers for Volvo Trucks AB (Volvo Lastvagnar AB). Much of my knowledge of leaf spring material and production stems from this involvement with the leaf spring suppliers.

7. Furthermore, my responsibility for kinematic leaf springs has been increased to cover the whole vehicle front suspension system, where focus has been placed on the front axle beam

in order to achieve the right stiffness characteristics while keeping the weight as low as possible. Thus, I am currently working as an Analyst Engineer for Front Suspension and Steering in the department of Chassis and Vehicle Dynamics. My knowledge of front axle forging techniques comes from this work, which has been carried out together with my colleague and co-inventor Leon Fuks. Leon Fuks is the main designer of all front axle beams at Volvo Trucks AB.

8. During the last years, I also worked as a deputy group leader in my design department.

9. I understand the Examiner has cited Winkler et al., U.S. 3,793,703, to support an obviousness rejection in connection with the subject patent application, and I have reviewed Winkler carefully. In my experienced opinion, Winkler does not disclose the same metal-working processes as are recited in the claims, and there are significant differences between the processes shown in Winkler and those recited in the claims.

10. As recited in the claims, the present invention uses die forging. Die forging is a metal-shaping process in which a heated workpiece is shaped or formed by rapid closing of a punch and die, which forces the workpiece to conform to a die cavity. A workpiece may be forged by a series of punch and die operations (or by several cavities in a given die) to gradually change its shape. Die forging is also called impression die or closed die or drop forging.

11. Winkler, in contrast, discloses roll forging. Roll forging is a process for shaping stock material between two counter-rotating driven rollers that have one or more matching sets of grooves along their peripheries. The blank 6 shown in Winkler Figure 9 clearly has been roll forged to produce the housing half shown in Winkler Figure 12, i.e., the blank has been passed through a series of rollers to deform the sides of the blank 6 (Figure 9) upwards to form the cross-section shown in Winkler Figure 13. The fact that roll forging has been used is clearly indicated by the position of the burrs 8 before (Winkler Figure 9) and after (Winkler Figure 12) the roll forging process. Had the blank shown in Winkler Figure 9 been drop forged into the shape indicated in Winkler Figure 12, then any burrs left by such a process would have been located at right angles to the burrs 8 shown in Winkler Figure 12, that is, in the dividing plane of a pair of forging dies; that is not, however, what Winkler shows.

12. This difference is significant because roll forging does not provide the same results or advantages as die forging.

13. In particular, roll forging does not provide the same degree of material deformation as die forging. Therefore, roll forging does not allow the blank to be forged to its final dimensions/configuration, in particular with respect to the internal surfaces of the axle blank.

14. A further, severe limitation of the roll forging process is that material deformation can only be controlled accurately in the direction of material feed through the roller nip; during and after the roll forging process wherein the sides are turned up, Winkler can no longer influence the thickness of the profile without using some other form of machining. That adds cost and complexity to the overall production process.

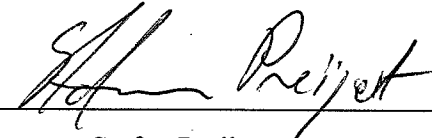
15. Yet another advantage of the method according to the invention relative to Winkler's method is that the inventive method allows the forged blanks to be welded together directly after the die forging process, without the need for additional machining; flashes and burrs may be remove subsequently. Winkler, on the other hand, must machine each semi-finished blank after roll forging before any welding of the blanks is possible (see the burrs 8 in Winkler Figure 9).

16. Finally, the overall inventive method allows us to forge thin shaped structure with very good material strength due to the compressed sections, but also the possibility to put material exactly were we want it. We are then able to use these shell forged sections and join them to form a hollow structure with the same strength in the joining area as we have in the rest of the forged material. This is, in my opinion, unique in the art.

All statements which I have made in this Declaration of my own knowledge are true, and all statements which I have made in this Declaration on information and belief are believed to be true. I have also been warned that willful false statements and the like are punishable by fine or imprisonment or both under § 1001 of Title 18 of the United States Code and may jeopardize the validity or enforceability of this application or any patents issuing thereon.

Date: _____

15/12-2008



Stefan Preijert